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## NA1 Air Circuit Breaker

01

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NA1 Air  
Circuit Breaker | CHNT

KEMA  
S PC RCC CB

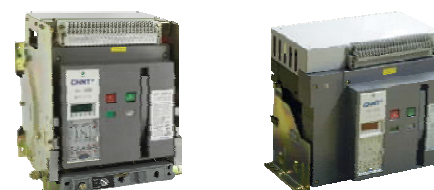
Summary

3 frame sizes, 1 family

The new range of air circuit breakers includes one family:  
NA1 series in three frame sizes, one with rated current from 400A to 2000A, another 2000A to 4000A and the other 4000A to 6300A.



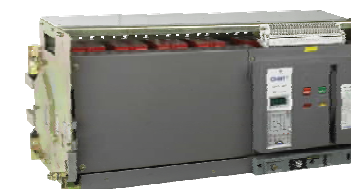
NA1-2000  
400A to 2000A

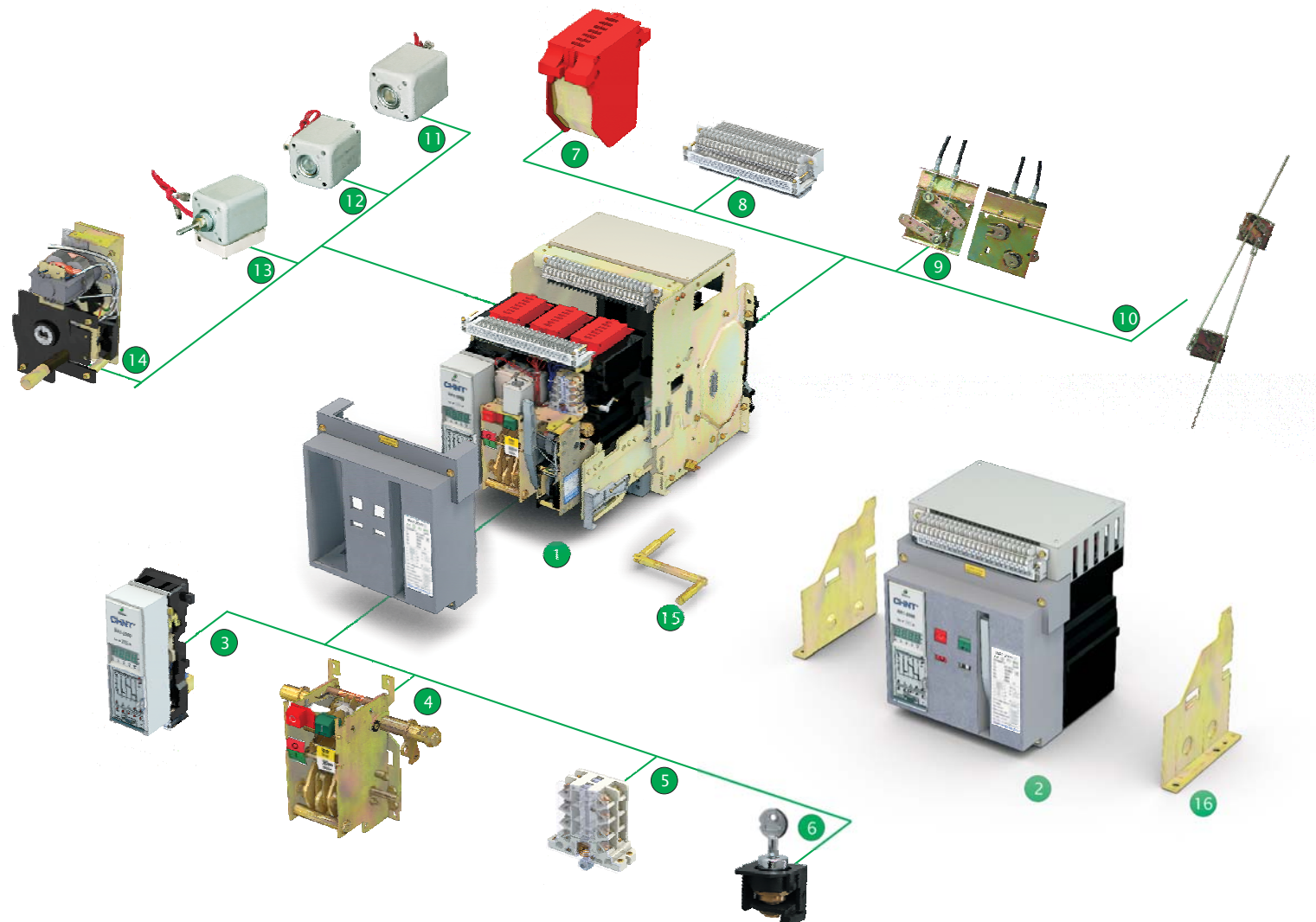


NA1-3200, 4000  
2000A to 4000A



NA1-6300  
4000A to 6300A





## NA1 Air Circuit Breaker

- 1 Drawout type
- 2 Fixed type
- 3 Intelligent controller
- 4 Operating mechanism
- 5 Auxiliary contact
- 6 Locking-device
- 7 Arcing chamber
- 8 Secondary connecting part
- 9 Wire-cable mechanical interlock
- 10 Connecting-rod type mechanical interlock
- 11 Shunt release
- 12 Closing electromagnet
- 13 Under-voltage release
- 14 Motor-driven energy-storage mechanism
- 15 Rotary handle
- 16 Fixed plate

## 1. Essentials of NA1

### 1.1 APPLICATION SCOPE

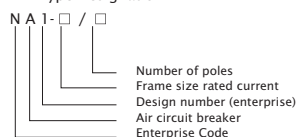
NA1 series air circuit breaker is suitable for the circuit of AC 50Hz/60Hz with rated service voltage 400V, 690V and rated service current up to 6300A. It is mainly used to distribute electric energy and protect circuits and power-supply equipment from over-load, under-voltage, short-circuit and single-phase earthing. With intelligentized and selective protection functions, the breaker can improve the reliability of power supply, and avoid unnecessary power failure. The breaker is applicable for power stations, factories, mines (for 690V) and modern high-buildings, especially for the distribution system of intelligent building.

1.2 Standard: IEC/EN60947-2.

1.3 Certifications: CB, PCT, RCC, KEMA, SEMKO

## 2. Type Designation

### 2.1 Type Designation



### 2.2 Environment conditions for operation

#### Environmental temperature

Temperature condition:  $-5^{\circ}\text{C}\sim+40^{\circ}\text{C}$ ; the average value within 24h shall not exceed  $+35^{\circ}\text{C}$  (Special situation excluded);

#### 2.3 Elevation

Altitude of installation place shall not exceed 2000m.

#### Atmosphere condition

Relative humidity at  $+40^{\circ}\text{C}$  shall not exceed 50%. Higher humidity is permissible at lower temperature condition. When the highest monthly average relative humidity is 90% in the humidest month, the lowest monthly average temperature of this month is  $+25^{\circ}\text{C}$ . And consider the influence of dew on product surface due to temperature changes.

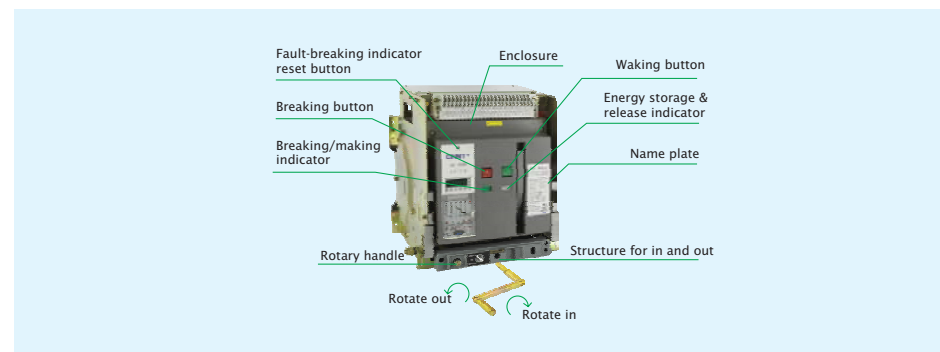
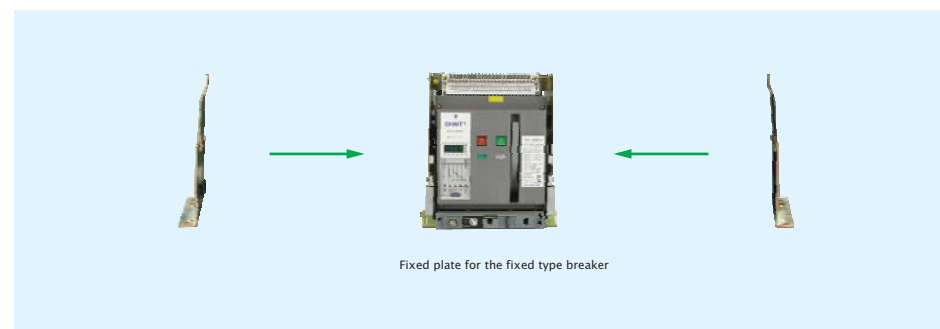
Pollution grade: grade III.

The breaker should be installed according to the requirements on the instruction manual. The vertical inclination degree shall not exceed  $5^{\circ}$ .

2.4 Note: Without the intelligent controller, the breaker functions as a switch-disconnector.



Fixed type breaker/switch-disconnector



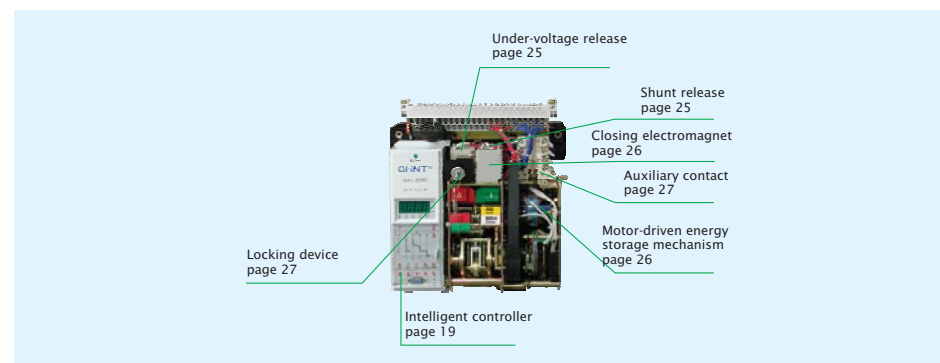
## 3. Structure

Drawout type breaker and Fixed type breaker

Drawout type breaker/switch-disconnector



The breaker is composed of body and drawer base. Inserting the body into the drawer base, make it into drawout-type breaker.

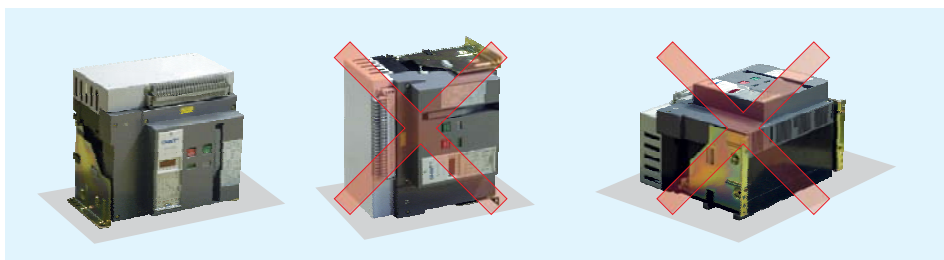


## 4. Installation and usage

### 4.1 Installation

4.1.1 Unload the breaker from the soleplate of package. If it is drawout type, firstly pull out the handle under the drawer-base of breaker, and plug it into the hole on central part of plastic cover under the drawer-base crossbeam, anticlockwise turns the handle, body will slowly slide along the outside of drawer-base. When the guide rod points to separated position and handle can't be rotated any longer, pull out the handle and firmly grasp the aluminum handle on drawer-base, pull out the breaker body and remove it from the base, then move the base from the soleplate and clean up the dirty things inside the drawer-base.

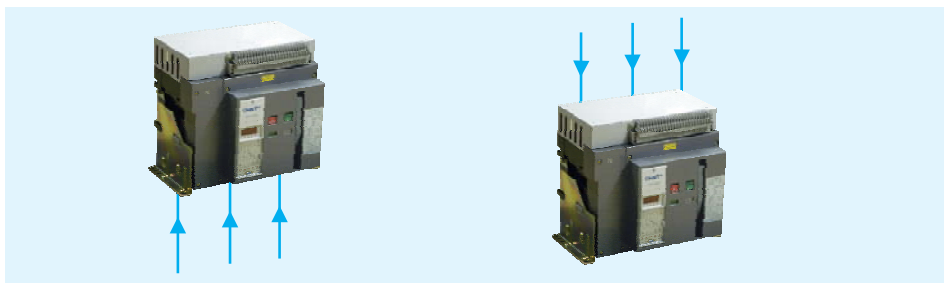
Possible positions



4.1.2 Check the insulation resistance with a 500V megger, resistance should not be less than  $20M\Omega$  when ambient temperature is  $20^{\circ}C \pm 5^{\circ}C$  and relative humidity is 50%~70%. Otherwise dry it.

### 4.1.3 Power supply

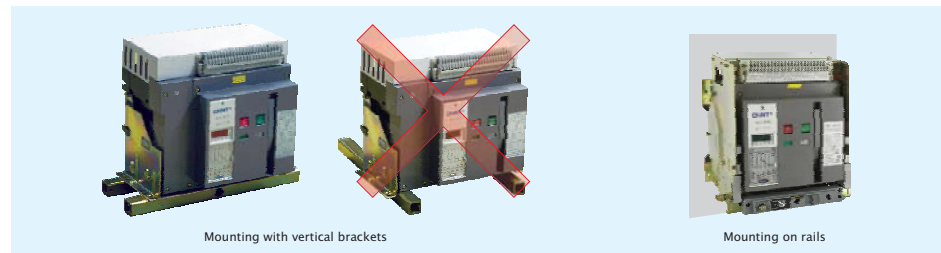
NA1 devices can be supplied either from the top or from the bottom without reduction in performance, in order to facilitate connection when installed in a switchboard.



4.1.4 Put the breaker (fixed-type) or drawer-base (drawout-type) into the installation-bracket, and make it fixed, directly connect the cable wire of main circuit to the bus wire of fixed-type circuit breaker. Alternatively put breaker body onto the slideway of drawer-base. Plug the handle into installation hole, clockwise turns it until the under-part of drawer-base points at the connection position and "click" sound is heard. It indicates that breaker body has been connected to its place, then connect the cable of main circuit to drawer-base. Mounting the circuit-breaker

It is important to distribute the weight of the device uniformly over a rigid mounting surface such as rails or a base plate. This mounting plane should be perfectly flat (tolerance on support flatness: 2 mm). This eliminates any risk of deformation which could interfere with correct operation of the circuit breaker.

NA1 devices can also be mounted on a vertical plane using the special brackets.



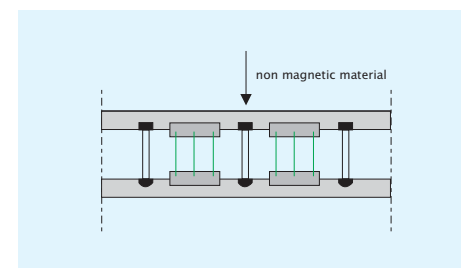
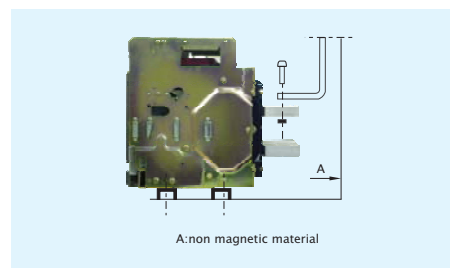
### 4.1.5 Partitions

Sufficient openings must be provided in partitions to ensure good air circulation around the circuit breaker; Any partition between upstream and downstream connections of the device must be made of nonmagnetic material.

For high-currents, of 2500 A and upwards, the metal supports or barriers in the immediate vicinity of a conductor must be made of non-magnetic material A; Metal barriers through which a conductor passes must not form a magnetic loop.

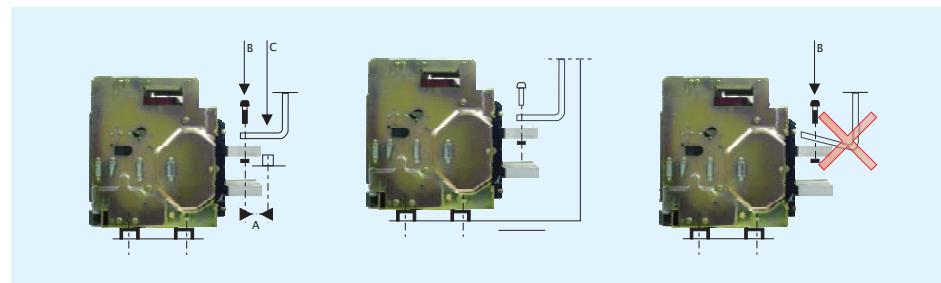
### Busbars

The mechanical connection must be excluded the possibility of formation of a magnetic loop around a conductor



### 4.1.6 Busbar connections

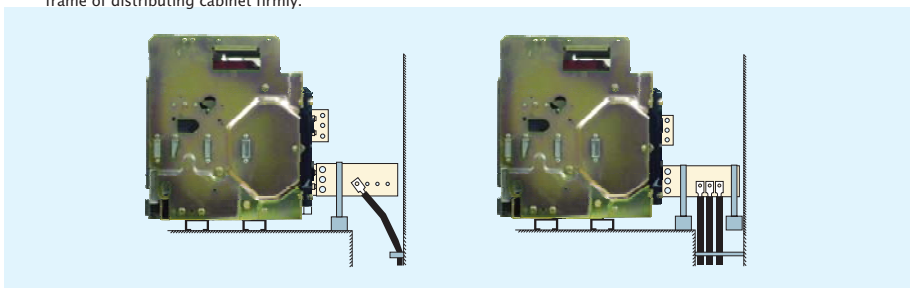
The busbars should be suitably adjusted to ensure the connection points are positioned on the terminals before the bolts are inserted B The connections are held by the supporter which is fixed to the framework of the switchboard, in this way the circuit breaker terminals do not have to support its weight C. (This support should be placed close to the terminals).





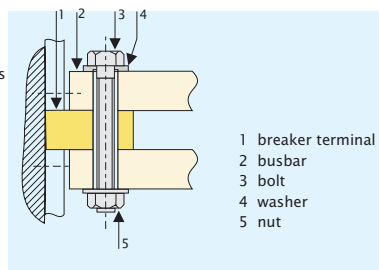
#### 4.1.7 Main circuit adopts cable connection

Users should not apply too strong mechanical strength on the terminals of Air Circuit Breaker. Extend the bus-bar of circuit breaker with connecting bus-bar, position the wiring piece of cable before inserting bolts; the cable should be fixed on the frame of distributing cabinet firmly.

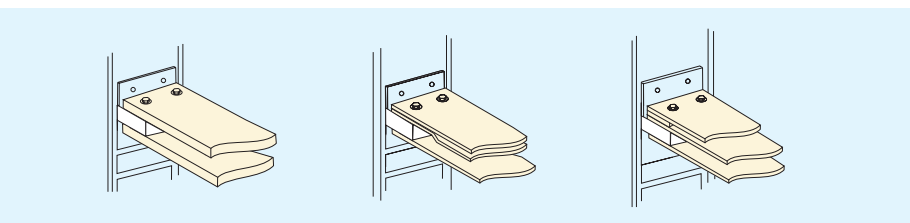


#### 4.1.8 Clamping

Correct clamping of busbars depends on the tightening torques used for the nuts and bolts, etc. Over-tightening may have the same consequences as under-tightening. For connecting busbars to the circuit breaker, the tightening torques to be used are shown in the table below. These values are for use with copper busbars and steel nuts and bolts, class 8.8.

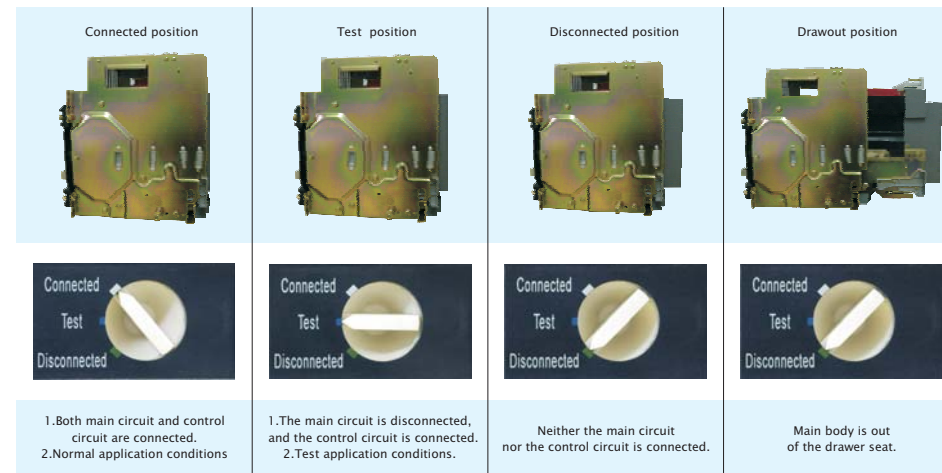


#### Examples



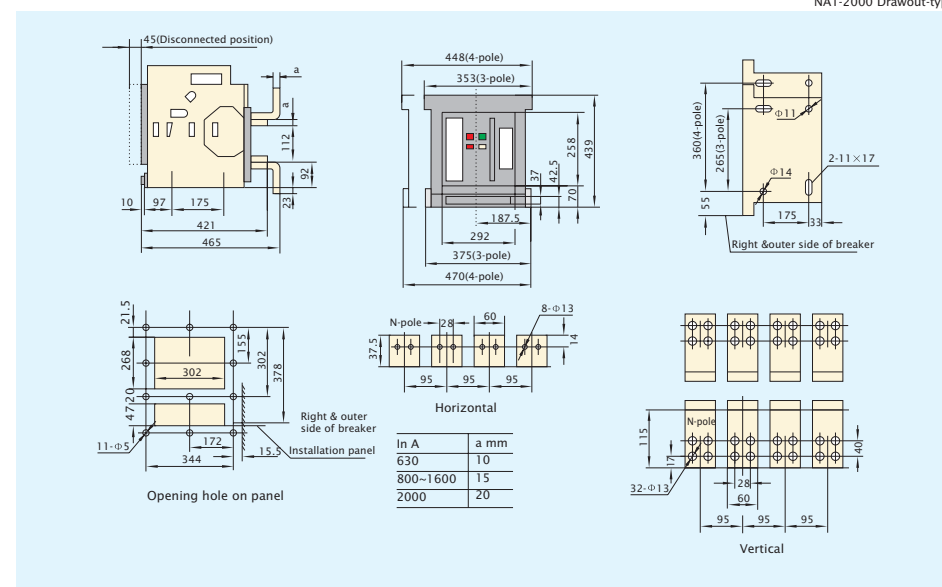
Preferred tightening torque for NA1's tightening components

Type of screw	Application	Preferred tightening torque
M4	Screws for secondary terminals	11Nm
M10	Installing bolts of Air Circuit Breaker	45Nm
M12	Connection terminals	50Nm

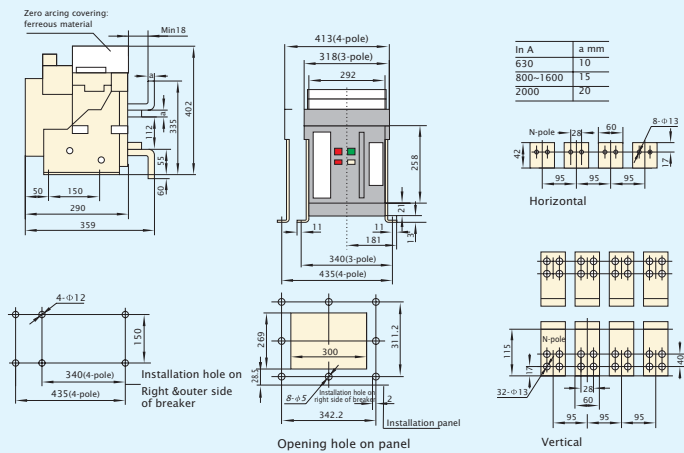


## 5. Dimensions and connection

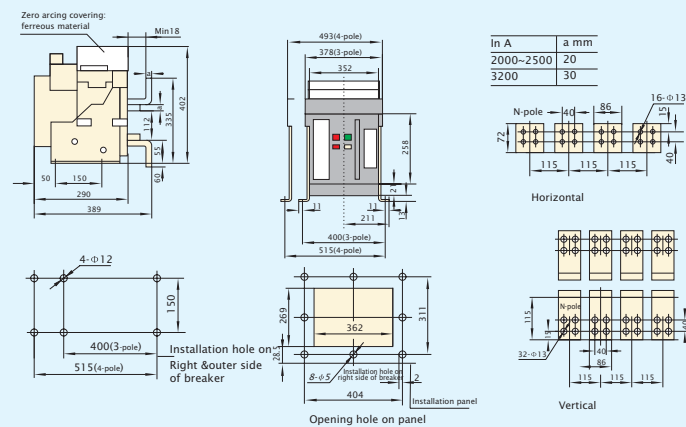
NA1-2000 Drawout-type



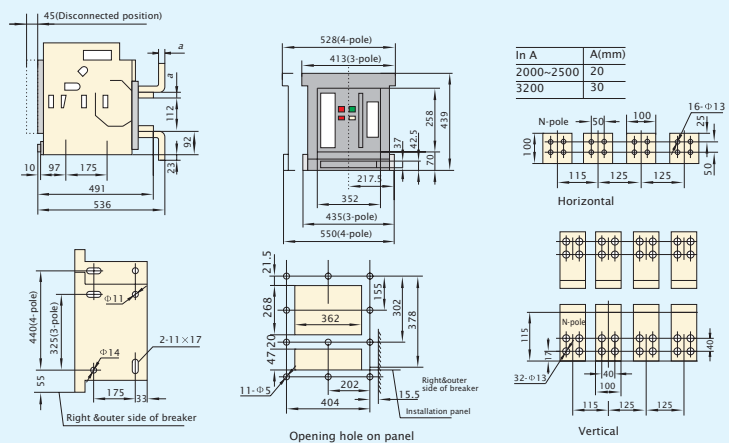
NA1-2000 Fixed-type



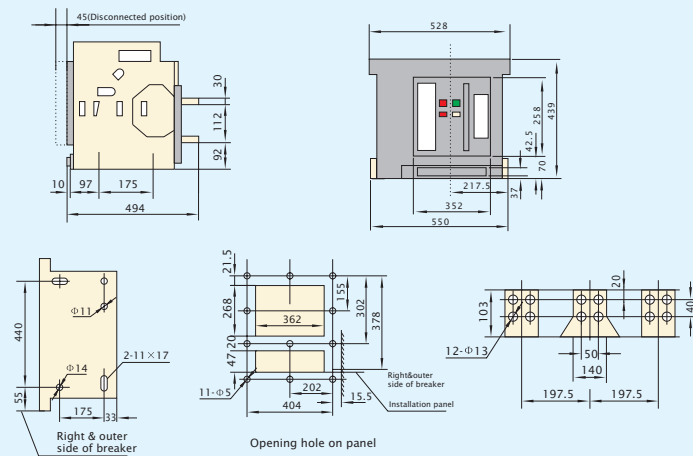
NA1-3200 Fixed type



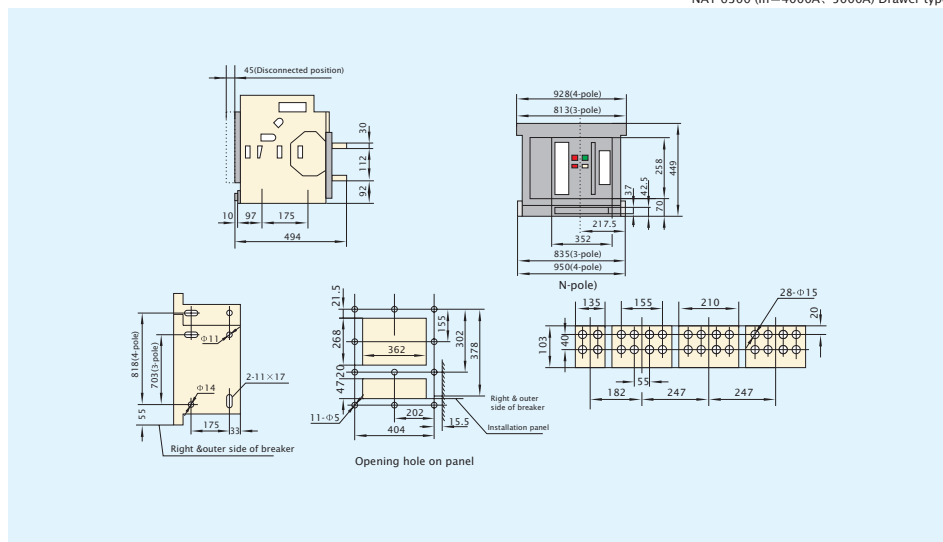
NA1-3200 Drawerout-type



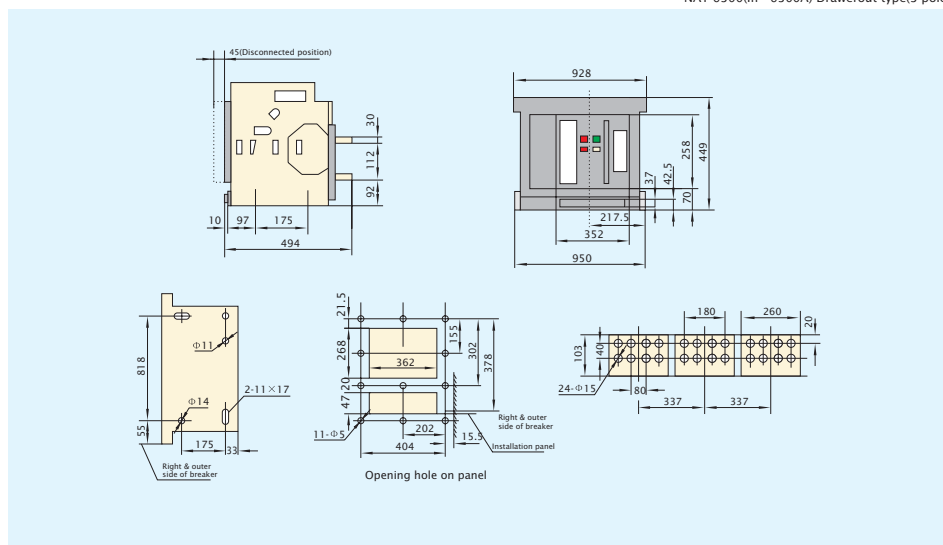
NA1-4000 Drawerout-type(3-pole)



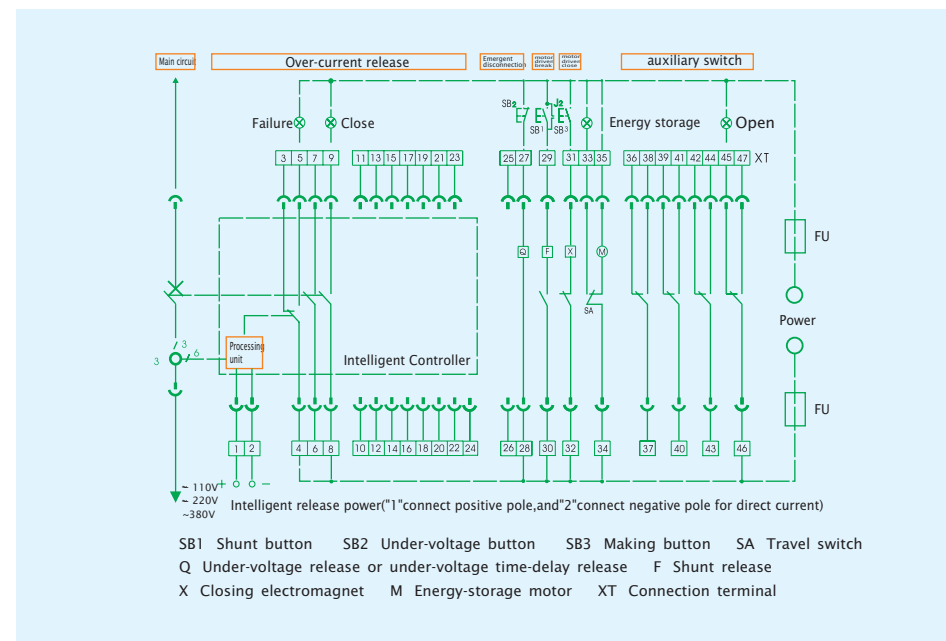
NA1-6300 (In=4000A、5000A) Drawer type



NA1-6300(In=6300A) Drawerout-type(3-pole)



## Secondary circuit wiring and maintenance



Note: If control voltage of Q, F, X is different from each other, they can be connected to different power. If model ST intelligent release is DC, it must pass through U1 and U2 before directly connected to terminal 1 or 2.Circuit explanation for signal output

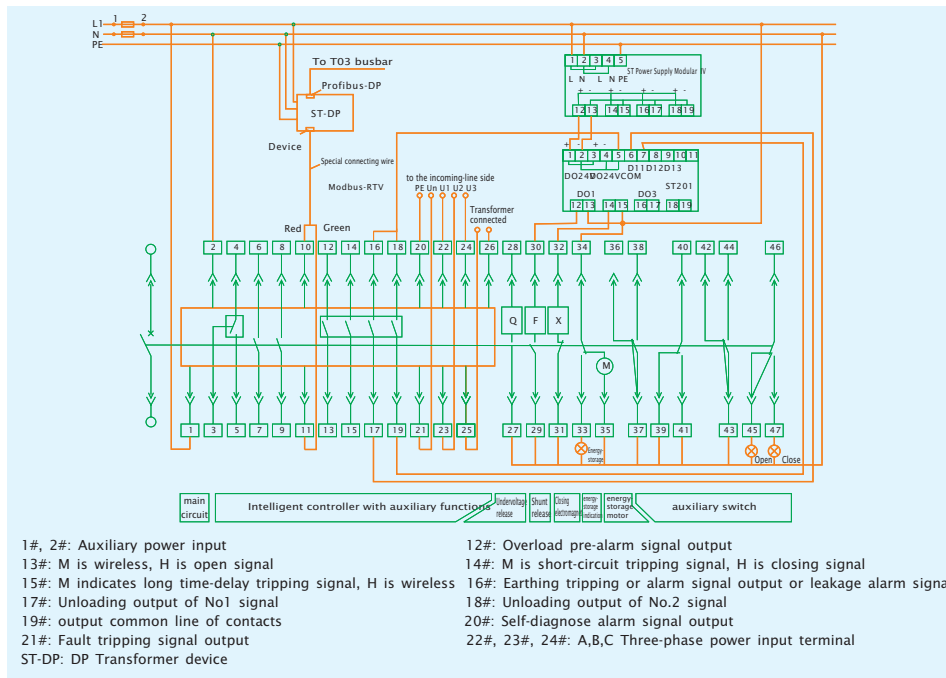
a.Broken-line parts shall be provided by customers.

b.Terminals 6# ~7# can output NC (normal close) contact if that is required by users.

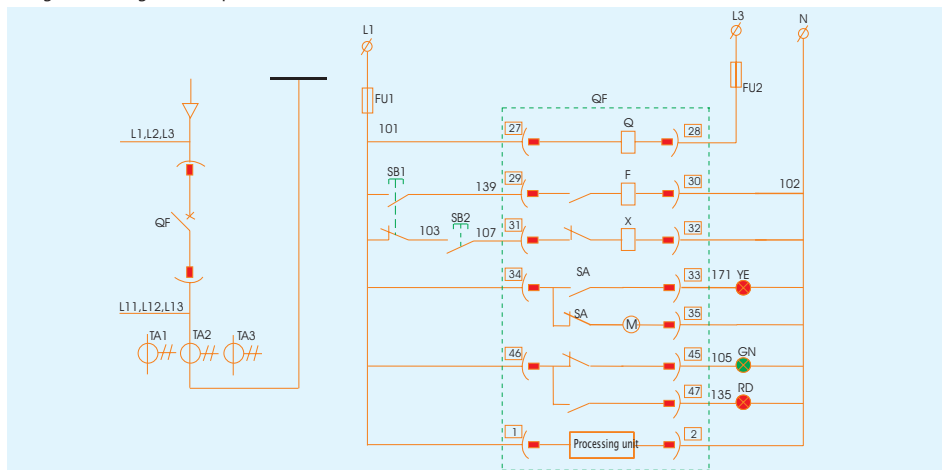
c.Terminal 35# can be directly connected to power (automatic pre-storing energy), alternatively connect power after connecting NO button (manual-controlled pre-storing energy).

In order to avoid the damage to shunt release and closing electromagnet, one group of NO (shunt release) or NC (closing electromagnet) contact should be separately connected to the control circuit.

Wiring diagram of communication-type intelligent controller



Single receiving-circuit operation circuit



QF: Circuit breaker NA1-□

FU1~2: Fuse RT14-20/10A

SB1~2: Button LA18-22 Each one for red and green

YEHL: Signal indicator AD11-25~230V Yellow

GNHL: Signal indicator AD11-25~230V Green

RDHL: Signal indicator AD11-25~230V Red

Number inside the broken-line circle, is the terminal number on terminal block of NA1 body (Na1 Inner components)

Q: Under-voltage coil~400V

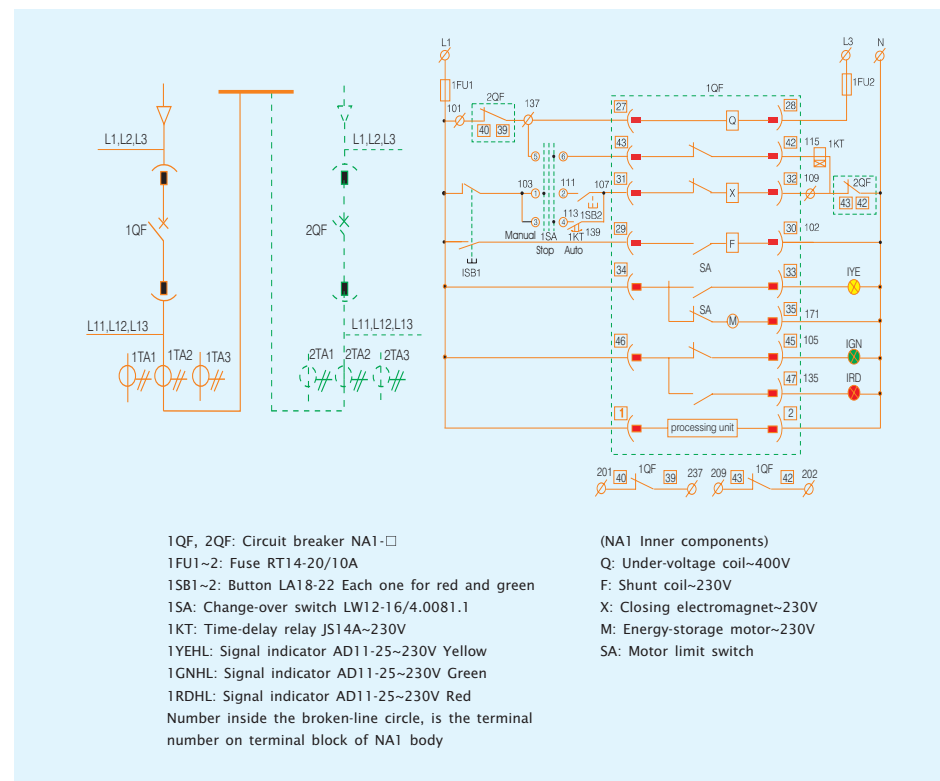
F: Shunt coil~230V

X: Closing electromagnetic~230V

M: Energy-storage motor~230V

SA: Motor limit switch

Dual receiving-circuit auto-switching operation circuit



#### 5.1 Wiring the secondary circuit according to electric principle diagram.

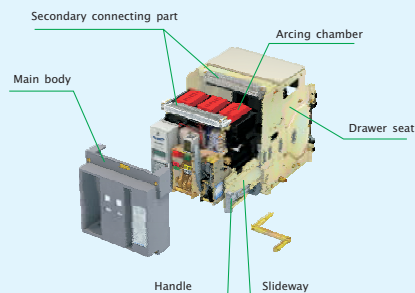
Note: Bolts, nuts, gaskets shouldn't be left inside the drawer seat to avoid being blocked.

#### 5.2 Operation

Check the rated voltage of the following components whether conforms to the power voltage. Such as under voltage release, shunt release, closing electromagnet, motor-driven mechanism and intelligent controller

#### 5.3 Maintenance

Check the technical parameters in time or add some lubricating oil, etc. This breaker structure is arranged vertically and modularized composition with each function cell separated, which make the maintenance easy. It has compact structure, reliable operation and strong free maintenance capability. Please check the technical parameters on the nameplate in accordance with the requirements of order before installation



Making the secondary circuit power, the motor-driven mechanism can store energy automatically until hearing the click and energy stored "indicating on the panel. Otherwise press the storage handle for 6 times until hearing the click and the indicator display energy stored". And the closing operation can be realized either by closing electromagnet or manual button.

Manual energy-storage



Shake with the manual energy-storage handle up and down about six times to "click".

## 6. Regular malfunction and solutions

Fault description	Reasons analysis	Maintenance method
Tripping of circuit breaker	Over load tripping (IL indicator flashing)	1. Check the breaking current value and operation time of intelligent release. 2. Analyze the load and electric network, exclude the overload if it happens. 3. Match the actual operating current with long time-delay current setting value. 4. Press the reset button to reclose the breaker
	Short circuit tripping ("Is" or "li" indicator flashing)	1. Check the breaking current value and operation time of intelligent release. 2. Exclude the short circuit fault if it happens 3. Check the setting value of intelligent release 4. Check the normal state of breaker 5. Press the reset button to reclose the breaker
	Earthing fault tripping (IG indicator flashing)	1. Check the breaking current value and acting time of intelligent release. 2. Exclude the earthing fault if that happens. 3. Match the fault current setting value with the actual protection. 4. Press the reset button to reclose the breaker.
	Under-voltage release fault: 1. Rated working voltage is less than 70%Ue 2. Fault of control unit	1. Check the power is on or not 2. Check the power voltage of under-voltage release, it shouldn't be less than 85%Ue. 3. Replace the control unit of under-voltage release
	Mechanical interlock acting	Check the working state of two circuit breakers fixed with mechanical interlock
The breaker can't be closed	Intelligent release don't reset (panel is raised)	Press the reset button to reclose the breaker
	Secondary circuit of drawer-type breaker isn't connected	Make the breaker to "making" position ("click" sound will be heard)
	Breaker hasn't stored energy	Check the secondary circuit: 1. Power voltage of motor shouldn't less than 85%Ue. 2. Check the storage mechanism, replace it if necessary.
	Mechanical interlock acting leads to locking of breaker	Check the working state of two circuit breakers fixed with mechanical interlock
	Closing electromagnet: 1. Rated control voltage is less than 85%Us; 2. Closing electromagnet is damaged	1. Power voltage of closing electromagnet shouldn't less than 85%Us. 2. Replace the electromagnet.
Tripping after closing the circuit breaker (Fault indicator flashing)	Tripping immediately: 1. Short circuit current is closed 2. Delay tripping because of transient current is high when closing; 3. Overload current is closed	1. Check the breaking current value and operation time of intelligent release; 2. Exclude the short circuit fault if it happens; 3. Exclude overload fault 4. Check the normal state of breaker 5. Modify the current setting value of intelligent release 6. Press the reset button to reclose the breaker



Fault description	Reasons analysis	Maintenance method
Circuit breaker can't be opened	The breaker can't be opened manually 1. There is fault with mechanical operating mechanism	1. Check the mechanism, if there is fault happened.
	The breaker can't be opened by motor remotely 1. There is fault with mechanical operating mechanism 2. Power voltage of shunt release is less than 70%Us; 3. Shunt release is damaged	1. Check the mechanism, if there is fault happened. 2. Check the Power voltage of shunt release is less than 70%Us or not 3. Replace shunt release
Circuit breaker can't store energy	Manual storage can't be realized	Mechanical fault with the energy-storage device
	Motor storage can't be realized 1. Power voltage of motor energy-stored device is less than 85%Us; 2. There is mechanical fault with energy-storage device	1. Power voltage of motor energy-stored device shouldn't less than 85%Us 2. Mechanical fault with the energy-storage device
Handle of drawerout-type circuit breaker can't be drawn in or out	1. There is padlock at the "opening" position 2. Slideway or breaker body isn't pulled into its position	1. Take away the padlock 2. Pull the slideway or breaker body into its position
Drawerout-type breaker can't be drawn out at the "opening" position	1. Handle isn't pulled out 2. Breaker is not totally at the "opening" position	1. Pull out the handle 2. Keep the circuit breaker totally at "opening" position
Drawerout-type breaker can't reach the "making" position	1. Something drop into the drawer base, and lock the mechanism or mechanism fault happens. 2. Breaker body not match with the frame-size rated current of drawer base	1. Check and clean the drawer base, or contact with manufacturer 2. Match the body with relevant drawer base
No display on intelligent release panel	1. Release isn't connected with power 2. There is fault with release	1. Check the power is connected or not 2. Cut off the power, then connect again. Otherwise contact with manufacturer
	Closing electromagnet: 1. Rated control voltage is less than 85%Us; 2. Electromagnet is damaged	1. Check the electromagnet power voltage shouldn't be less than 85%Us. 2. Replace the closing electromagnet.
Fault indicator still flashing after pressing the clear button	Fault happened with intelligent release	Cut off the power, then connect again. Otherwise contact with manufacturer

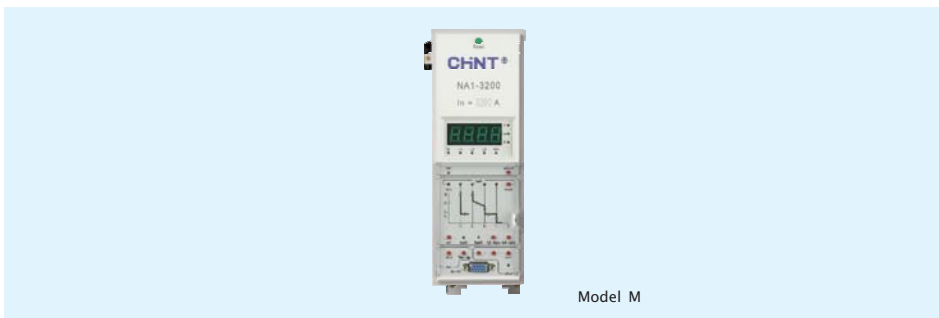
## 7. Intelligent controller

Intelligent controller is the core part of circuit breaker, it is classified into two types: standard and communication.

Protection function	Standard type	Communication type
Inverse-time protection for overload long-delay	√	√
Inverse-time protection or definite time-delay protection for short-circuit short-delay	√	√
Instantaneous short-circuit protection	√	√
Protection of neutral line or earthing faults	√	√
Over-voltage protection		
Under-voltage protection		
Over-frequency protection		
Under-frequency protection		
Protection of unbalanced voltage		
Protection of phase sequence		
Measuring function		√
Measure of current		√
Measure of voltage		√
Measure of frequency		
Measure of power factor		√
Measure of power		√
Detection of phase sequence		
Measure of unbalanced rate of voltage		
Measure of electric energy		√
Maintenance function		
Test function	√	√
Inspecting and memorizing faults function	√	√
Self-diagnosis function	√	√
Equivalent of contactor		○
Recording historical parameter of power network		○
Others functions		
Monitoring load function	○	○
MCR ON/OFF function	○	○
Output of signal touch points function	○	○
Zone selectivity interlocking (ZSI) function		○
Communication function		√

Note: "√" means basic function, "○" means optional function.

## 7.1 Standard type (model M)



Model M

### 7.1.1 Basic functions:

- a. Over-load long inverse time-delay protection
- b. Short inverse time-delay or definite time-delay protection
- c. Instantaneous protection
- d. Earthing fault protection
- e. Query function
- f. Parameter setting function
- g. Test function

### 7.1.2 Selective function:

- a. Load monitor function
- b. Making current release (MCR)
- c. Signal alarm function

details are in user manual

### 7.2 Communication type (Model H)

communication has one more function of communication than the standard.

#### 7.2.1 Basic functions:

- a. Over-load long inverse time-delay protection
- b. Short inverse time-delay or definite time-delay protection
- c. Instantaneous protection
- d. Earthing fault protection
- e. Ampere-meter function
- f. Self-check
- g. Setting
- h. Test
- i. Monitoring with load
- j. Display

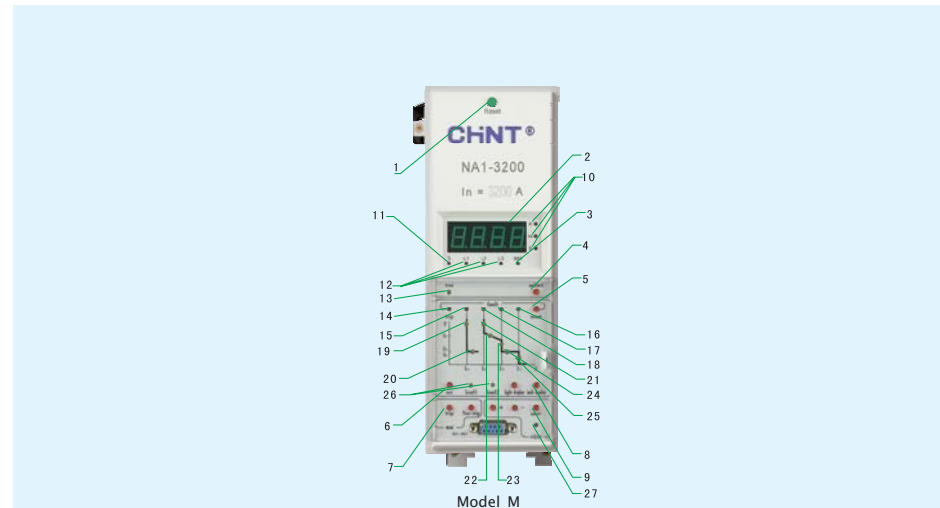
#### 7.2.2 selective functions

- a. Voltage
- b. Frequency
- c. Power factor
- d. Active power display

Refer to 《intelligent controller user manual》 for details.

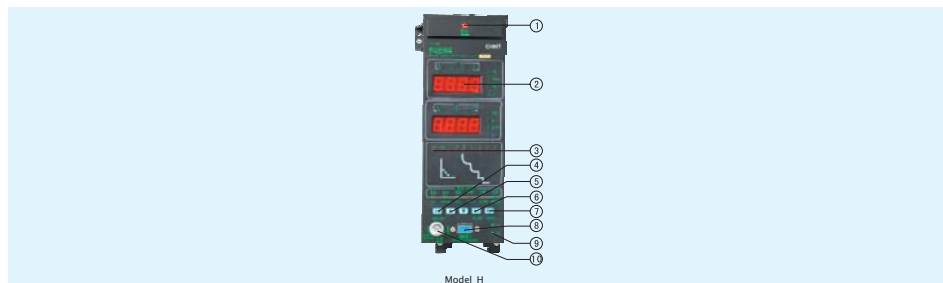


Model H



Model M

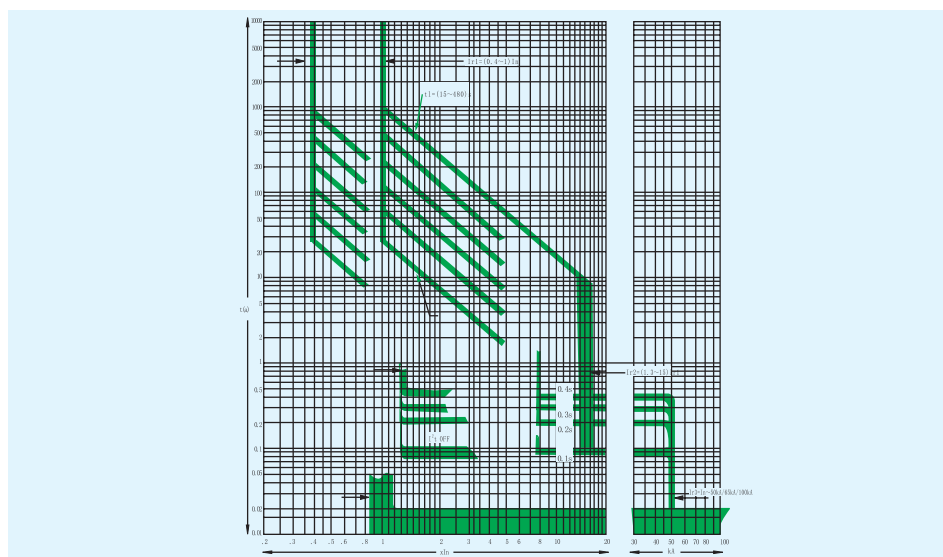
- 1 Reset button: After the breaker trip by fault, the reset button should be pressed in order to make it close again. Otherwise, it won't be realized.
- 2 Display screen: It shows time and current value.
- 3 LED indicator: display all states and types.
- 4 Select key: Under normal operation state, shows the parameters of current, time or voltage of every phase.
- 5 Clean key: Press this key to make breaker normally operate after release's setting, test, fault or data check.
- 6 Set key: Check and set the current and time for protection characteristic. Press this key to circularly display each state of breaker.
- 7 Trip or non-trip key: Used for release test function, when tested, the breaker is needed to be broken or not.
- 8 Fault check key: Press this key to display the last fault state and its fault current and time.
- 9 Save +—key: Setting the current and time.
- 10 A/KA/S indicator: Indicate the unit of displayed value.
- 11 G" indicator: Indicate the displayed current is earthing fault current.
- 12 "L1, L2, L3" indicator: "L1, L2, L3" is the phase of displayed current, if "MAX" simultaneously shining with one of L1,L2,L3, it shows the displayed phase's current is maximum among three phases.
- 13 Test indicator: it indicates the breaker is at the test state.
- 14 Trip indicator: Indicate the release sending out tripping signal.
- 15 Indicator flashing shows the earthing-fault process state, if shining with "trip" light, shows it has tripped.
- 16 Indicator flashing shows the fault process state of instantaneous short-circuit, if shining with "trip" light, shows it has tripped.
- 17 Indicator flashing shows the fault process state of short-circuit short time-delay, if shining with "trip" light, shows it has tripped.
- 18 Indicator flashing shows the fault process state of overload long time-delay, if shining with "trip" light, shows it has tripped.
- 19 Set state of earthing fault protection, set current is displayed if the light flashes.
- 20 Set state of earthing fault protection, set time is displayed if the light flashes.
- 21 Set state of long time-delay protection, set current is displayed if the light flashes.
- 22 Set state of long time-delay protection, set time is displayed if the light flashes.
- 23 Set state of short time-delay protection, set current is displayed if the light flashes.
- 24 Set state of instantaneous protection, set time is displayed if the light flashes.
- 25 Set state of short time-delay protection, set time is displayed if the light flashes.
- 26 "Load1", "load2" indicator means two current settings are monitored with load.
- 27 the indicator flashes once means the set value has been saved.



- 1 Reset button: After the breaker trip by fault, the reset button should be pressed in order to make it close again. Otherwise, it won't be realized.
- 2 Display screen: It shows time, current and voltage., etc.
- 3 LED indicator: display all states and types.
- 4 Function key: Press this key to select the function to be operated.
- 5 "▲" key: Check and set the current and time for protection characteristic. Press this key to circularly display each state of breaker.
- 6 Confirm key: After selecting the function or parameter, press this key to confirm.
- 7 Return key: After the function is operated, press this key to choose another function or set parameter.
- 8 Programme interface: Original program of release, compiling of parameter and modification input.
- 9 Communication light: This light flashing if release at the communication state.
- 10 Position lock: Indicates the state of release if communication function is operated.

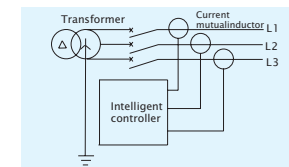
Note: Conform to the communication protocol of Modbus or Profibus + DP.

Characteristic of intelligent controller

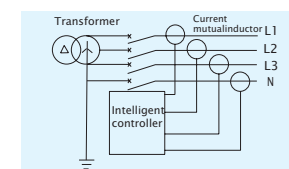


### 7.3 Protecting manners for earthing faults

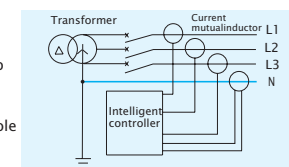
- a. NA1 three-pole circuit breaker is used in three-phase three-wire system without additional external-connection mutual-inductor.  
Protective signal of earthing faults only adopts vector summation of three-phase current.  
Characteristic of protection is definite time-delay protection.



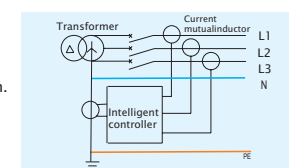
- b. NA1 four-pole circuit breaker is used in three-phase four-wire system  
Protective signal of earthing faults adopts vector summation of three-phase current and N-pole current.  
Characteristic of protection is definite time-delay protection.



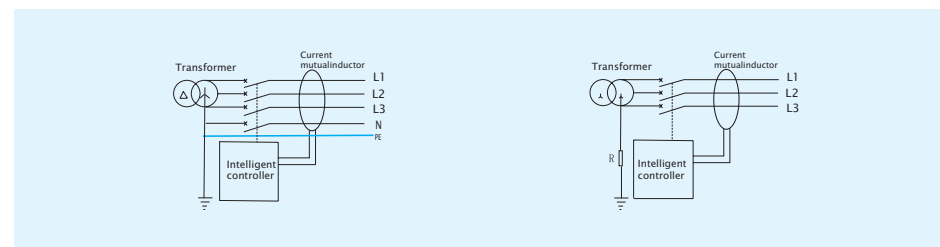
- c. NA1 three-pole circuit breaker is used in three-phase four-wire system  
Current mutual-inductor connected with neutral-pole N outside and the mutual-inductor inside circuit breaker are used for protection of earthing faults after combining (connected to No. 25 and No. 26 of terminals). Neutral-pole mutual-inductor is provided together with the circuit breaker.  
Protective signal of earthing faults adopts vector summation of three-phase current and N-pole current.  
Characteristic of protection is definite time-delay protection.




- d. External-connection mutual-inductor is used for protection of earthing faults through detecting the current of earthing-cable directly (connected to No. 25 and No. 26 of terminals), i.e. it is earth-current type which is applicable for earthing of transformer, and here the longest distance between mutual-inductor and circuit breaker is no more than 10m.  
Characteristic of protection is definite time-delay protection.





- e. External-connection mutual-inductor is used for protection of earthing faults (electric leakage) through detecting current by means of zero-sequence sampling (connected to No. 25 and No. 26 terminals), i.e. it is external-connection mutual-inductor, residual-current type.  
The sensitivity of this type is very high, and the current of earthing faults is not related with rated current of the circuit breaker. It is suitable for the earthing protection with smaller earthing current. The external-connection mutual-inductor will be prepared by the user.  
Characteristic of protection is definite time-delay protection



## 8. Choosing manual

Type		NA1-2000							
									
Rated ultimate breaking capacity (Icu)		Icu=80kA 400V				50kA 690V			
Rated service breaking capacity (Ics)		Ics=50kA 400V				40kA 690V			
Rated short-time withstand current (Icw)		Icw=50kA 400V				40kA 690V			
Rated current In (A)		400	630	800	1000	1250	1600	2000	
Number of poles		3, 4							
Rated voltage Ue (V)		400, 690							
Rated insulation voltage Ui (V)		1000							
Rated current of N-pole (A)		50%In, 100%In							
Break time (ms)		23~32							
Intelligent controller	Standard type (M)	●	●	●	●	●	●	●	
	Communication type (H)	●	●	●	●	●	●	●	
Operation performance	Electrical life	1000							
	Mechanical life	Non-maintenance 2500							
		Maintenance 10000							
Connection pattern		Horizontal, Vertical							

Type		NA1-3200、NA1-4000				NA1-6300		
Short-circuit breaking capacity								
Rated ultimate breaking capacity (Icu)		Icu=100kA 400V		65kA 690V		Icu=120kA 400V		85kA 690V
Rated service breaking capacity (Ics)		Ics=80kA 400V		65kA 690V		Ics=100kA 400V		75kA 690V
Rated short-time withstand current (Icw)		Icw=80kA 400V		50kA 690V		Icw=100kA 400V		75kA 690V
Rated current In (A)		2000	2500	3200	4000	4000	5000	6300
Number of poles		3, 4			3	3, 4		3
Rated voltage Ue (V)		400, 690				400, 690		
Rated insulation voltage Ui (V)		1000				1000		
Rated current of N-pole In (A)		50%In, 100%In				50%In, 100%In		
Fixed disconnection time (ms)		23~32				23~32		
Intelligent controller	Standard type (M)	●	●	●	●	●	●	●
	Communication type (H)	●	●	●	●	●	●	●
Operation performance	Electrical life	500				500		
	Mechanical life	Non-maintenance 2500				Non-maintenance 2500		
		Maintenance 10000				Maintenance 10000		
Connection pattern		Horizontal, Vertical				Horizontal, Vertical		

## 9. Accessories

9.1 Shunt release (electrifying time is no more than 1 s/time, and electrifying frequency is no more than 5 times/min.)  
Except manual-operated to directly break the circuit breaker for special products It can be remote-operated to break the circuit breaker  
Characteristic

Rated control power voltage Us (V)	AC400, 230, 127	DC220, 110
Working voltage (V)	(0.7~1.1) Us	
Power loss	300VA	40W
Breaking time	30ms~50ms	

Forbid making the power for long time to avoid being damaged.



9.2 Under-voltage release (power supply must be connected before circuit breaker's connection)  
Users can select it or not up to your needs. Under-voltage release is used to break circuit breaker and protect the equipment (such as motor) when under-voltage or voltage-failure happens. or automatically break the under-voltage circuit of power supply system, improves the reliability and safety (such as dual circuit). It is classified into instantaneous and time-delay type. Delay-time of under-voltage time-delay release is classified into four types of 1s, 3s, 5s and 7s, and the accuracy is  $\pm 15\%$ . Within 1/2 time-delay range, circuit breaker does not break when power voltage recovers and exceeds 85%Ue.

### Characteristic

Rated control power voltage Us (V)	AC400, 230, 127	DC220, 110
Work voltage (V)	(0.35~0.7) Ue	
Reliable breaking voltage (V)	(0.85~1.1) Ue	
Reliable non-breaking voltage (V)	$\leq 0.35Ue$	
Power loss	48VA (W)	

Close the circuit before operating the circuit breaker



9.3 Closing electromagnet (electrifying time is no more than 1 s/time, and electrifying frequency is no more than 5 times/min.)  
After the motor finishes energy storage, closing electromagnet can instantly release spring-force of operation mechanism, and quickly close the circuit breaker.

#### Characteristic

Rated control power voltage Us (V)	AC400, 230, 127	DC220, 110
Work voltage (V)	(0.85~1.1) Us	
Power loss	300VA	40W
Energy-storage time	Less than 70ms	

Forbid making the power for long time to avoid being damaged.

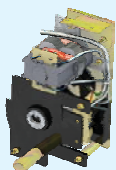


9.4 Motor-driven energy-storage mechanism (electrifying time is no more than 5s/time, and electrifying frequency is no more than 3 times/min.) With automatic re-storing energy function, which is convenient for switching duplicate power supply.

#### Characteristic

Rated control power voltage Us (V)	AC400, 230	DC220, 110
Work voltage (V)	(0.85~1.1) Us	
Power loss	85W/110W/150W	192W
Storing-energy time	Less than 5s	

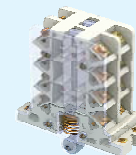
Forbid making the power for long time to avoid being damaged.



#### 9.5 Auxiliary contact

Standard model: 4-NO (normal open) and 4-NC (normal close) Special models: 3-NO & 5-NC, 5-NO & 3-NC, 6-NO & 2-NC, 2-NO & 6-NC. Rated value

Rated voltage (V)	Conventional free-air thermal current Ith (A)	Rated control capacity
AC230	6	300VA
AC400	6	300VA
DC220	6	60W



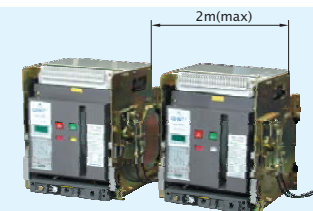
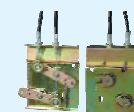
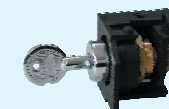
#### 9.6 Off position locking device

Off position locking device will make the breaking button locked at the pressed position, and the breaker can't be closed at this moment.

When drawer-type breaker at the breaking position, pull out the lock-rod and lock the breaker by padlock, after that circuit breaker can't reach "test" or "making" position (Padlock is prepared by users), locks and keys will be provided by us. Separate lock and key is matched with one set of circuit breaker. Two same locks and keys are matched with two circuit breakers. three same locks and two same keys are matched with three circuit breakers.

#### 9.7 Mechanical interlock

It can realize the interlock of two horizontal or vertical-installed three-pole or four-pole drawer-type or fixed-type circuit breakers.



#### 9.8 Connecting-rod type mechanical interlock

Three vertical-installed three-pole or four-pole drawer-type or fixed-type circuit breakers realize the interlock between one breaker with another two different-state breakers.

## 10. Recommendation for user's connecting bus-bar

Inm(A)	NA1-2000						NA1-3200				NA1-4000				NA1-6300	
In(A)	630	800	1000	1250	1600	2000	2000	2500	2900	3200	4000/3200	4000/4000	4000	5000	6300	
Busbar	Thickness(mm)	5	6	6	8	8	8	10	10	10	10	10	10	10	10	
	Width(mm)	50	60	80	80	100	100	100	100	100	100	100	100	100	100	
	Number	2	2	2	2	2	2	2	4	4	4	4	4	6	6	

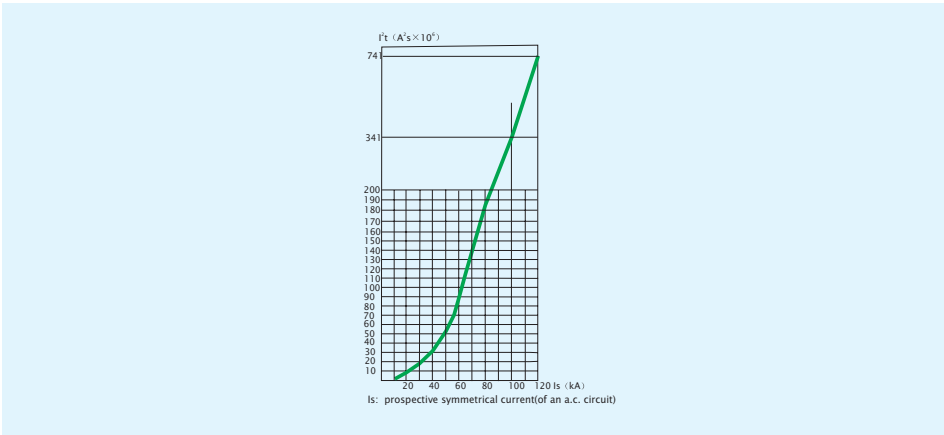
Note: the specifications in the table is obtained as the ambient temperature of air circuit breaker is 40°C, with open installation; this is in compliance with the specification of copper busbars adopted under the heating conditions regulated in IEC/EN60947-2.



### 11. Power loss

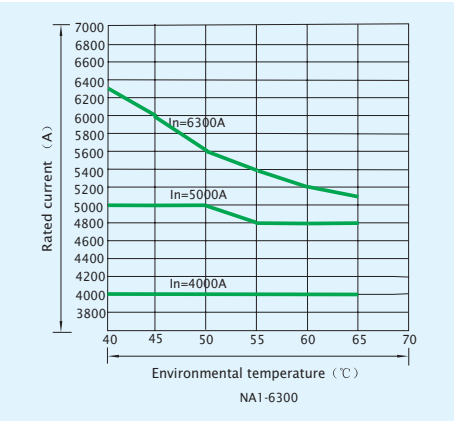
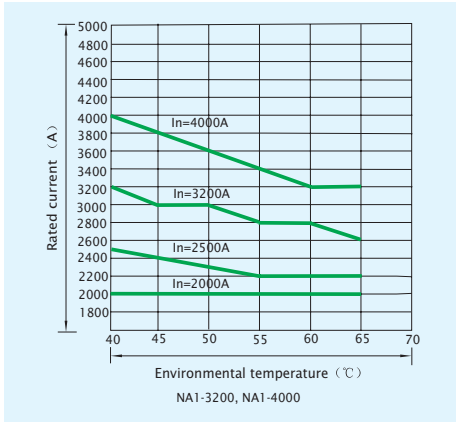
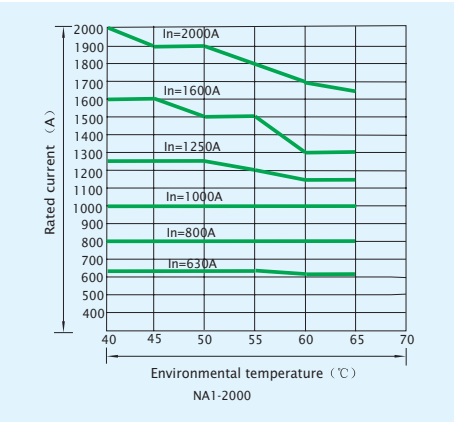
Inm(A)		NA1-2000						NA1-3200			NA1-4000		NA1-6300		
In(A)		630	800	1000	1250	1600	2000	2000	2500	3200	4000/3P	4000/4P	4000	5000	6300
Power loss (W)	Drawer type	70	110	172	268	440	530	384	600	737	921	900	575	898	1426
	Fixed type	34.4	50	78	122	200	262	200	312	307	-	-	-	-	-

### 12. A<sup>2</sup>S curve



### 13. Derating usage

Standard	Environmental temperature	NA1-2000						NA1-3200 NA1-4000				NA1-6300		
IEC/EN60947-2	40℃	630	800	1000	1250	1600	2000	2000	2500	3200	4000	4000	5000	6300
	45℃	630	800	1000	1250	1600	1900	2000	2400	3000	3800	4000	5000	6000
	50℃	630	800	1000	1250	1500	1900	2000	2300	3000	3600	4000	5000	5600
	55℃	630	800	1000	1200	1500	1800	2000	2200	2800	3400	4000	4800	5400
	60℃	610	800	1000	1150	1300	1700	2000	2200	2800	3200	4000	4800	5200
	65℃	610	800	1000	1150	1300	1650	2000	2200	2600	3200	4000	4800	5100



#### 14. Coordination recommendations

Capacity of transformer (kVA) & parallelly connected number	Rated current of transformer In(A)	Short circuit current of main circuit (kA)	Breaking capacity of air circuit breaker for main circuit (kA)	Type of air circuit breaker for main circuit	Number and area of the busbar for main circuit (n×W×T)	Breaking capacity of air circuit breaker for branch circuit (kA)	Air circuit breaker for branch circuit
1×250	360	9	9	NA1-1000-400	240mm <sup>2</sup>	9	NA1, NM8
2×250	360	9	9	NA1-1000-400		18.5	
3×250	360	9	18.5	NA1-1000-400		27.5	
1×315	455	11.4	11.4	NA1-1000-630	300mm <sup>2</sup>	11.4	NA1, NM8
2×315	455	11.4	11.4	NA1-1000-630		22.7	
3×315	455	11.4	22.7	NA1-1000-630		34.1	
1×400	578	14.4	14.4	NA1-1000-630	30×10	14.4	NA1, NM8
2×400	578	14.4	14.4	NA1-1000-630		28.8	
3×400	578	14.4	28.8	NA1-1000-630		43.2	
1×500	722	18	18	NA1-1000-800	2×40×5	18	NA1, NM8
2×500	722	18	18	NA1-1000-800		36.1	
3×500	722	18	36.1	NA1-1000-800		54.1	
1×630	910	22.7	22.7	NA1-1000-1000	2×50×5	22.7	NA1, NM8
2×630	910	22.7	22.7	NA1-1000-1000		44.5	
3×630	910	22.7	44.5	NA1-2000-1000		67.2	
1×800	1154	19.3	19.3	NA1-2000-1250	3×50×5	19.3	NA1, NM8
2×800	1154	19.3	19.3	NA1-2000-1250		38.5	
3×800	1154	19.3	38.5	NA1-2000-1250		57.8	
1×1000	1444	24	24	NA1-2000-1600	2×60×10	24	NA1, NM8
2×1000	1444	24	24	NA1-2000-1600		48.1	
3×1000	1444	24	48.1	NA1-2000-1600		72.1	
1×1250	1805	30	30	NA1-2000-2000	2×80×10	30	NA1, NM8
2×1250	1805	30	30	NA1-2000-2000		60.1	
3×1250	1805	30	60.1	NA1-2000-2000		90.1	
1×1600	2310	36.5	36.5	NA1-3200-2500	2×100×10	36.5	NA1, NM8
2×1600	2310	36.5	36.5	NA1-3200-2500		73	
3×1600	2310	36.5	73	NA1-3200-2500		109.5	
1×2000	2887	48.2	48.2	NA1-3200-3200	2×120×10	48.2	NA1, NM8
2×2000	2887	48.2	48.2	NA1-3200-3200		96.3	
3×2000	2887	48.2	96.3	NA1-3200-3200		144.5	
1×2500	3608	60	60	NA1-4000-4000	2×(2×80×10)	60	NA1, NM8
2×2500	3608	60	60	NA1-4000-4000		120	
1×3150	4550	75.8	75.8	NA1-6300-5000	2×(2×120×10)	75.8	NA1, NM8
2×3150	4550	75.8	75.8	NA1-6300-5000		151.6	

## 15. Selectivity protection

## 15.1 Selective protection between NM8 and NA1

				Circuit breaker	NA1-2000						NA1-3200			NA1-4000		NA1-6300			
Downstream			Upstream	Rated current (A)	400	630	800	1000	1250	1600	2000	2000	2500	3200	3200	4000	4000	5000	6300
				Default setting ratings of short time-delay 8In (kA)	3.2	5.04	6.4	8	10	16	16	20	25.6	25.6	32	32	40	50.4	
				Setting range (kA)	0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
				Delayed tripping time (s)	0.1, 0.2, 0.3, 0.4						0.1, 0.2, 0.3, 0.4								
				Returnable time	0.06, 0.14, 0.23, 0.35														
Frame size	Rated current (A)	Instantaneous setting ratings (kA)																	
NM8-125 NM8S-125	16	0.16		0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.19(motor)		0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	20	0.2		0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.24(motor)		0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	25	0.25		0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.30(motor)		0.414~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	32	0.32		0.4416~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.38(motor)		0.5224~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	40	0.40		0.552~6	0.63~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.48(motor)		0.6624~6	0.6624~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	50	0.50		0.69~6	0.69~9.45	0.8~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.60(motor)		0.828~6	0.828~9.45	0.828~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
NM8-250 NM8S-250	63	0.63		0.8694~6	0.8694~9.45	0.8694~12	1~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.75(motor)		1.035~6	1.035~9.45	1.035~12	1.035~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	80	0.80		1.104~6	1.104~9.45	1.104~12	1.104~15	1.25~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		0.96(motor)		1.325~6	1.325~9.45	1.325~12	1.325~15	1.325~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	100	1.0		1.38~6	1.38~9.45	1.38~12	1.38~15	1.38~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		1.20(motor)		1.656~6	1.656~9.45	1.656~12	1.656~15	1.656~18.75	1.656~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	125	1.25		1.725~6	1.725~9.45	1.725~12	1.725~15	1.725~18.75	1.725~24	1.725~30	1.725~30	1.725~37.7	1.725~48	1.725~48	1.725~60	1.725~60	1.725~75	1.725~94.5	
		1.5(motor)		2.07~6	2.07~9.45	2.07~12	2.07~15	2.07~18.75	2.07~24	2.07~30	2.07~30	2.07~37.7	2.07~48	2.07~48	2.07~60	2.07~60	2.07~75	2.07~94.5	
	160	1.6		1.38~6	1.38~9.45	1.38~12	1.38~15	1.38~18.75	1.6~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		1.2(motor)		1.656~6	1.656~9.45	1.656~12	1.656~15	1.656~18.75	1.656~24	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	200	1.6		2.208~6	2.208~9.45	2.208~12	2.208~15	2.208~18.75	2.208~24	2.208~30	2.208~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		1.92(motor)		2.65~6	2.65~9.45	2.65~12	2.65~15	2.65~18.75	2.65~24	2.65~30	2.65~30	2.65~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
	250	2.0		2.76~6	2.76~9.45	2.76~12	2.76~15	2.76~18.75	2.76~24	2.76~30	2.76~30	2.76~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5	
		2.4(motor)		3.312~6	3.312~9.45	3.312~12	3.312~15	3.312~18.75	3.312~24	3.312~30	3.312~30	3.312~37.7	3.312~48	3.312~48	4~60	4~60	5~75	6.3~94.5	
	250	2.5		3.45~6	3.45~9.45	3.45~12	3.45~15	3.45~18.75	3.45~24	3.45~30	3.45~30	3.45~37.7	3.45~48	3.45~48	4~60	4~60	5~75	6.3~94.5	
		3.0(motor)		4.14~6	4.14~9.45	4.14~12	4.14~15	4.14~18.75	4.14~24	4.14~30	4.14~30	4.14~37.7	4.14~48	4.14~48	4.14~60	4.14~60	5~75	6.3~94.5	

				Circuit breaker	NA1-2000								NA1-3200			NA1-4000		NA1-6300		
Downstream			Upstream	Rated current (A)	400	630	800	1000	1250	1600	2000	2000	2500	3200	3200	4000	4000	5000	6300	
				Default setting ratings of short time-delay 8In (kA)	3.2	5.04	6.4	8	10	16	16	20	25.6	25.6	32	32	40	50.4		
				Setting range (kA)	0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75	2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5		
				Delayed tripping time (s)	0.1, 0.2, 0.3, 0.4										0.1, 0.2, 0.3, 0.4					
				Returnable time	0.06, 0.14, 0.23, 0.35										0.06, 0.14, 0.23, 0.35					
Frame size rated current	Rated current(A)	Instantaneous setting ratings(kA)																		
NM8-630 NM8S-630	250	2.5 3.0(motor)		3.45~6 4.14~6	3.45~9.45 4.14~9.45	3.45~12 4.14~12	3.45~15 4.14~15	3.45~18.75 4.14~18.75	3.45~24 4.14~24	3.45~30 4.14~30	3.45~30 4.14~30	3.45~37.7 4.14~37.7	3.45~48 4.14~48	3.45~48 4.14~48	4~60 4.14~60	4~60 4.14~60	5~75 5~75	6.3~94.5 6.3~94.5		
	315	3.15 3.78(motor)		4.347~6 5.216~6	4.347~9.45 5.216~9.45	4.347~12 5.216~12	4.347~15 5.216~15	4.347~18.75 5.216~18.75	4.347~24 5.216~24	4.347~30 5.216~30	4.347~30 5.216~30	4.347~37.7 5.216~37.7	4.347~48 5.216~48	4.347~48 5.216~48	4.347~60 5.216~60	4.347~60 5.216~60	5~75 5.216~75	6.3~94.5 6.3~94.5		
	350	3.5 4.2(motor)		4.83~6 5.796~6	4.83~9.45 5.796~9.45	4.83~12 5.796~12	4.83~15 5.796~15	4.83~18.75 5.796~18.75	4.83~24 5.796~24	4.83~30 5.796~30	4.83~30 5.796~30	4.83~37.7 5.796~37.7	4.83~48 5.796~48	4.83~48 5.796~48	4.83~60 5.796~60	4.83~60 5.796~60	5~75 5.796~75	6.3~94.5 6.3~94.5		
	400	4.0 4.8(motor)		5.52~6 6.624~9.45	5.52~9.45 6.624~9.45	5.52~12 6.624~12	5.52~15 6.624~15	5.52~18.75 6.624~18.75	5.52~24 6.624~24	5.52~30 6.624~30	5.52~30 6.624~30	5.52~37.7 6.624~37.7	5.52~48 6.624~48	5.52~48 6.624~48	5.52~60 6.624~60	5.52~60 6.624~60	5.52~75 6.624~75	6.3~94.5 6.624~94.5		
	500	5.0 6.0(motor)			6.9~9.45 8.28~9.45	6.9~12 8.28~12	6.9~15 8.28~15	6.9~18.75 8.28~18.75	6.9~24 8.28~24	6.9~30 8.28~30	6.9~30 8.28~30	6.9~37.7 8.28~37.7	6.9~48 8.28~48	6.9~48 8.28~48	6.9~60 8.28~60	6.9~60 8.28~60	6.9~75 8.28~75	6.9~94.5 8.28~94.5		
NM8S-630	630	6.3 7.56(motor)			8.694~9.45	8.694~12 10.44~12	8.694~15 10.44~15	8.694~18.75 10.44~18.75	8.694~24 10.44~24	8.694~30 10.44~30	8.694~30 10.44~30	8.694~37.7 10.44~37.7	8.694~48 10.44~48	8.694~48 10.44~48	8.694~60 10.44~60	8.694~60 10.44~60	8.694~75 10.44~75	8.694~94.5 10.44~94.5		
	630	6.3 7.56(motor)			8.694~9.45	8.694~12 10.44~12	8.694~15 10.44~15	8.694~18.75 10.44~18.75	8.694~24 10.44~24	8.694~30 10.44~30	8.694~30 10.44~30	8.694~37.7 10.44~37.7	8.694~48 10.44~48	8.694~48 10.44~48	8.694~60 10.44~60	8.694~60 10.44~60	8.694~75 10.44~75	8.694~94.5 10.44~94.5		
NM8-1250 NM8S-1250	700	7.0 8.4(motor)				9.66~12 11.59~12	9.66~15 11.59~15	9.66~18.75 11.59~18.75	9.66~24 11.59~24	9.66~30 11.59~30	9.66~30 11.59~30	9.66~37.7 11.59~37.7	9.66~48 11.59~48	9.66~48 11.59~48	9.66~60 11.59~60	9.66~60 11.59~60	9.66~75 11.59~75	9.66~94.5 11.59~94.5		
	800	8.0 9.6(motor)				11.04~12	11.04~15 13.25~15	11.04~18.75 13.25~18.75	11.04~24 13.25~24	11.04~30 13.25~30	11.04~30 13.25~30	11.04~37.7 13.25~37.7	11.04~48 13.25~48	11.04~48 13.25~48	11.04~60 13.25~60	11.04~60 13.25~60	11.04~75 13.25~75	11.04~94.5 13.25~94.5		
	1000	10 12(motor)					13.8~15	13.8~18.75 16.56~18.75	13.8~24 16.56~24	13.8~30 16.56~30	13.8~30 16.56~30	13.8~37.7 16.56~37.7	13.8~48 16.56~48	13.8~48 16.56~48	13.8~60 16.56~60	13.8~60 16.56~60	13.8~75 16.56~75	13.8~94.5 16.56~94.5		
	1250	12.5 15.0(motor)						17.25~18.75	17.25~24 20.7~24	17.25~30 20.7~30	17.25~30 20.7~30	17.25~37.7 20.7~37.7	17.25~48 20.7~48	17.25~48 20.7~48	17.25~60 20.7~60	17.25~60 20.7~60	17.25~75 20.7~75	17.25~94.5 20.7~94.5		

15.2 Selective protection in NA1

				Circuit breaker	NA1-2000						NA1-3200			NA1-4000		NA1-6300					
Downstream			Upstream	Rated current (A)	400	630	800	1000	1250	1600	2000	2000	2500	3200	3200	4000	4000	5000	6300		
				Default setting ratings of short time-delay (kA)	3.2	5.04	6.4	8	10		16	16	20	25.6	25.6	32	32	40	50.4		
				Setting range (kA)	0.4~6	0.63~9.45	0.8~12	1~15	1.25~18.75		2~30	2~30	2.5~37.7	3.2~48	3.2~48	4~60	4~60	5~75	6.3~94.5		
				Delayed tripping time (s)	0.1, 0.2, 0.3, 0.4										0.1, 0.2, 0.3, 0.4						
				Returnable time	0.06, 0.14, 0.23, 0.35										0.06, 0.14, 0.23, 0.35						
Frame size	Rated current (A)	Default instantaneous setting ratings (kA)																			
NA1-2000	400	4.8			6.348~9.45	6.348~12	6.348~15	6.348~18.75	6.348~24	6.348~30	6.348~30	6.348~37.7	6.348~48	6.348~48	6.348~60	6.348~60	6.348~75	6.348~94.5			
	630	7.56				9.998~12	9.998~15	9.998~18.75	9.998~24	9.998~30	9.998~30	9.998~37.7	9.998~48	9.998~48	9.998~60	9.998~60	9.998~75	9.998~94.5			
	800	9.6					12.696~15	12.696~18.75	12.696~24	12.696~30	12.696~30	12.696~37.7	12.696~48	12.696~48	12.696~60	12.696~60	12.696~75	12.696~94.5			
	1000	12						15.87~18.75	15.87~24	15.87~30	15.87~30	15.87~37.7	15.87~48	15.87~48	15.87~60	15.87~60	15.87~75	15.87~94.5			
	1250	15							19.837~24	19.837~30	19.837~30	19.837~37.7	19.837~48	19.837~48	19.837~60	19.837~60	19.837~75	19.837~94.5			
	1600	19.2								25.392~30	25.392~30	25.392~37.7	25.392~48	25.392~48	25.392~60	25.392~60	25.392~75	25.392~94.5			
	2000	24										31.74~37.7	31.74~48	31.74~48	31.74~60	31.74~60	31.74~75	31.74~94.5			
NA1-3200	2000	24										31.74~37.7	31.74~48	31.74~48	31.74~60	31.74~60	31.74~75	31.74~94.5			
	2500	30											39.675~48	39.675~48	39.675~60	39.675~60	39.675~75	39.675~94.5			
	3200	38.4													50.784~60	50.784~60	50.784~75	50.784~94.5			
NA1-4000	3200	38.4													50.784~60	50.784~60	50.784~75	50.784~94.5			
	4000	48															63.48~75	63.48~94.5			
NA1-6300	4000	48															63.48~75	63.48~94.5			
	5000	60																79.35~94.5			
	6300	75																			

Note: It can satisfy the selective protection if only the short time-delay setting value of the superior breaker 1.32 times more than the subordinate breaker, when the instantaneous setting value is adjustive.



## 16. Order form

Customer:

Tel:

Date:

Quantity:

Model	NA1-2000	NA1-3200	NA1-4000	NA1-6300	
Rated current (In)A	<input type="checkbox"/> 400 <input type="checkbox"/> 630 <input type="checkbox"/> 800 <input type="checkbox"/> 1000 <input type="checkbox"/> 1250 <input type="checkbox"/> 1600 <input type="checkbox"/> 2000	<input type="checkbox"/> 2000 <input type="checkbox"/> 2500 <input type="checkbox"/> 3200	<input type="checkbox"/> 4000	<input type="checkbox"/> 4000 <input type="checkbox"/> 5000 <input type="checkbox"/> 6300(only 3 poles)	
Installation mode	<input type="checkbox"/> Drawerout type <input type="checkbox"/> Fixed type (note: =In 4000A fixed type is not available)				
Number of poles	<input type="checkbox"/> Three poles <input type="checkbox"/> Four poles				
Intelligent controller	<input type="checkbox"/> M-type standard type (default configuration) Protection function 1. <input type="checkbox"/> Ir1 protection for overload long time-delay, Ir2 inverse-time protection + definite time-delay protection for short-circuit short time-delay, Ir3 instantaneous protection for short-circuit, Ir4 4-section protection for single-phase earthing. 2. <input type="checkbox"/> Ir1 protection for overload long time-delay, Ir2 definite time-delay protection for short-circuit short time-delay, Ir3 instantaneous protection for short-circuit, Ir4 4-section protection for single-phase earthing.		Others functions 1. Function of current meter 2. Function of self-diagnosis 3. Function of setting 4. Function of test 5. Function of display	Optional function <input type="checkbox"/> Display of voltage <input type="checkbox"/> Display of frequency <input type="checkbox"/> Display of power factor <input type="checkbox"/> Display of power <input type="checkbox"/> Function of monitoring load ! Not items to be selected necessarily, cost of the increased will be calculated additionally	
	<input type="checkbox"/> H-type Communication-type (optional) 1. Ir1 protection for overload long time-delay, Ir2 definite time-delay protection for short-circuit short-delay, Ir3 instantaneous protection for short-circuit, 4-section protection for single-phase earthing. 2. Ir1 protection for overload long time-delay, Ir2 inverse-time protection + definite time-delay protection for short-circuit short time-delay, Ir3 instantaneous protection for short-circuit, 4-section protection for single-phase earthing.				
	Explanation: Available set range of protection function and conventional setting before delivery	Available set range of Ir1 long-delay current: (0.4~1) In      Conventional setting before delivery: overload long time-delay: 1.0In Available set range of operating time with overload 1.5In: 1s, 30, 60.....480s      Conventional setting before delivery: overload 1.5In, operating 15s			
		Conventional setting before delivery: short time-delay current 8Ir1 Available set range of current of Ir2 short-delay: Operating time of short-delay: 0.1~0.4s      1 Conventional setting before delivery: operating time of short time-delay: 0.4s 0.1~0.4s			
		Available set range of Ir3 instantaneous current : 1.0 In~50kA/75kA/100kA Conventional setting before delivery: 12In			
Available set scope of Ir4 earthing protection current: 0.2~0.8 In; Available set scope of operating time of earthing protection: 0.1~0.4s Conventional setting before ex-factory: 0.5 In;OFF					
Powersupplyofcontroller	<input type="checkbox"/> AC380V, <input type="checkbox"/> AC220V, <input type="checkbox"/> DC220V, <input type="checkbox"/> DC110V			(Optional)	
Electrical accessories	Under-voltage release(default configuration) <input type="checkbox"/> AC380V, <input type="checkbox"/> AC220V, <input type="checkbox"/> DC220V, <input type="checkbox"/> customize____V <input type="checkbox"/> Instantaneous <input type="checkbox"/> Delay____s;1s, 3s, 5s and 7s dialed delay may be provided) <input type="checkbox"/> Delay of RC under-voltage release: (1~7)s			(Optional)	
	Shuntrelease (default configuration) <input type="checkbox"/> AC380V, <input type="checkbox"/> AC220V, <input type="checkbox"/> DC220V, <input type="checkbox"/> DC110V			(Optional)	
	Motor (default configuration) <input type="checkbox"/> AC380V, <input type="checkbox"/> AC220V, <input type="checkbox"/> DC220V, <input type="checkbox"/> DC110V			(Optional)	
	Interlocking device(cost will becalculated additionally) <input type="checkbox"/> Connecting-rod interlocking (only provided for drawer-type) <input type="checkbox"/> Steel cable interlocking : ( for both types of drawer-type and fixed-type) <input type="checkbox"/> Button lock <input type="checkbox"/> Key lock: ( for both types of drawer-type and fixed-type) <input type="checkbox"/> Door interlock (open or closed position) <input type="checkbox"/> Door interlock (status of ON/OFF)			(Optional)	
Special requirements	Others functions (cost will be calculated additionally) <input type="checkbox"/> Function of earthing protection with external mutual-inductor (Mutual-inductor is prepared by the user)				
	Connection of main circuit <input type="checkbox"/> Explanation of vertical connection (prepared with vertical bus-bar): conventional supply is horizontal connection <input type="checkbox"/> Revolving bus-bar (Drawerout type In≤3200) (cost of the increased will be burden by the user)				
Remark: Current of frame size, rated current, and auxiliary control voltage must be indicated when ordering					

Note: 1) Please mark “ / ” or fill figure in the relative “ ☐ ” if no mark, we will provide according to conventional factory settings.  
 2) For ordering products with optional function or special requirements, please contact with us.



NA1-6300



NA1-4000



NA1-3200



NA1-2000

## NOTE